Sub B1

1. A method for depositing a platinum group metal on a substrate, comprising the steps of:

depositing said platinum group metal onto a substrate in a CVD deposition chamber in the presence of both oxygen and nitrous oxide at a predetermined temperature and pressure.

2. The method according to claim 1, wherein said platinum group metal is selected from the group consisting of Ru, Rh, Pd, Os, Ir and Pt.

3. The method according to claim 2, wherein said platinum based metal is Pt.

4. The method according to claim 1, wherein said predetermined temperature is from about 200°C to about 600°C.

5. The method according to claim 1, wherein said predetermined pressure is from about 1 to about 1000 Torr.

Sub B2

6. A method for depositing a platinum group metal on a substrate, comprising the steps of:

introducing a substrate into a CVD deposition chamber;

bubbling a gas over an organic platinum based metal precursor;

introducing said gas and said organic platinum based metal precursor to said CVD deposition chamber;

introducing oxygen to said CVD deposition chamber;

introducing nitrous oxide to said deposition chamber; and

depositing said platinum group metal onto said substrate in said CVD deposition chamber at a predetermined temperature and pressure.

7. The method according to claim 6, wherein said gas is a non-reactive gas.

8. The method according to claim 6, wherein said organic platinum based metal precursor is selected from the group consisting of cyclopentadienyl trimethylplatinum (IV) and methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

9. The method according to claim 8, wherein said organic platinum based metal precursor is methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

10. The method according to claim 6, wherein said predetermined temperature is from about 200°C to about 600°C.

11. The method according to claim 6, wherein said predetermined pressure is from about 1 to about 1000 Torr.

12. The method according to claim 7, wherein said non-reactive gas is selected from the group consisting of nitrogen, helium, neon, argon, krypton, and xenon.

13. The method according to claim 12, wherein said non-reactive gas is selected from the group consisting of helium, argon and nitrogen

14. The method according to claim 13, wherein said non-reactive gas is helium.

15. The method according to claim 7, wherein said non-reactive gas is introduced into said CVD deposition chamber at a rate of about 50 to about 500 sccm.

16. The method according to claim 15, wherein said non-reactive gas is introduced into said CVD deposition chamber at a rate of about 200 sccm.

17. The method according to claim 6, wherein the ratio of oxygen: nitrous oxide in the CVD deposition chamber is from about 5:95::95:5.

18. The method according to claim 17, wherein said ratio is from about 46:60::60:40.

19. The method according to claim 18, wherein said ratio is about 50:50.

20. The method according to claim 6, wherein said substrate is selected from the group consisting of BPSG, Si, TiN, Ti, oxides, PSG, Si_3N_2, polysilicon and silicide.

21. The method according to claim 20, wherein said substrate is selected from the group consisting of BPSG and Si.

22. The method according to claim 6, wherein said substrate is a capacitor for a memory cell.

23. The method according to claim 6, wherein said platinum based metal is deposited onto said substrate in said CVD deposition chamber for a time of about 75 to about 150 seconds.

24. The method according to claim 6, wherein said platinum based metal is deposited at a thickness of from about 50 to about 1000 Angstroms.

Sub B5

25. A method for depositing platinum onto a substrate, comprising the steps of:

introducing a substrate into a CVD deposition chamber;

bubbling a non-reactive gas over an organic platinum precursor selected from the group consisting of cyclopentadienyl trimethylplatinum (IV) and methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$;

introducing said non-reactive gas and said organic platinum precursor to said CVD deposition chamber;

introducing a 50/50 mixture by volume of oxygen and nitrous oxide to said CVD deposition chamber;

depositing said platinum group metal onto said substrate in said CVD deposition chamber at a temperature of from about 200 to about 600 °C and pressure of from about 1 to about 1000 Torr to form a continuous film on said substrate with good step coverage.

Sub B end

26. The method according to claim 25, wherein said organic platinum precursor is methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

27. The method according to claim 25, wherein said substrate is selected from the group consisting of BPSG, Si, TiN, Ti, oxides, PSG, Si_3N_2, polysilicon and silicide.

28. The method according to claim 27, wherein said substrate is selected from the group consisting of BPSG and Si.

29. The method according to claim 28, wherein said substrate is a capacitor for a memory cell.

30. The method according to claim 25, wherein said temperature is about 275°C.

31. The method according to claim 30, wherein said pressure is about 30 Torr.

32. The method according to claim 25, wherein platinum is deposited onto said substrate in said CVD deposition chamber for a time of about 100 to about 120 seconds.

33. The method according to claim 25, wherein said platinum based metal is deposited at a thickness of about 500 Angstroms.

34. The method according to claim 25, wherein said non-reactive gas is selected from the group consisting of nitrogen, helium, neon, argon, krypton, and xenon.

35. The method according to claim 34, wherein said non-reactive gas is helium.

36. The method according to claim 25, wherein said non-reactive gas is introduced into said CVD deposition chamber at a rate of about 200 sccm.

37. A capacitor comprising:

a first electrode and a second electrode;

a dielectric provided between said electrodes; and

wherein at least one of said first and second electrodes is formed of a continuous platinum group metal formed in the presence of both oxygen and nitrous oxide.

38. The capacitor according to claim 37, wherein said electrode is formed of a material selected from the group consisting of Ru, Rh, Pd, Os, Ir and Pt.

39. The capacitor according to claim 37, wherein said electrode is platinum.

40. The capacitor according to claim 39, wherein said platinum electrode is the lower electrode.

41. A capacitor comprising:

a first electrode and a second electrode;

a dielectric provided between said electrodes; and

wherein at least one of said first and second electrodes is formed by depositing platinum in a CVD deposition chamber in the presence of both oxygen and nitrous oxide at a predetermined temperature and pressure.

42. The capacitor according to claim 41, wherein said temperature is from about 250°C to about 300°C.

43. The capacitor according to claim 41, wherein said pressure is from about 15 to about 30 Torr.

44. The capacitor according to claim 41, wherein said platinum electrode is the lower electrode.

45. The capacitor according to claim 44, wherein said platinum electrode has a thickness of about 500 angstroms.

add B6